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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/561,332	12/16/2005	Young June Cho	406-0003	5981
60803 7590 04/16/2008 SHERR & NOURSE, PLLC 620 HERNDON PARKWAY SUITE 200 HERNDON, VA 20170				
EXAMINER				
AL HASHIMI, SARAH				
ART UNIT		PAPER NUMBER		
2853				
MAIL DATE		DELIVERY MODE		
04/16/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/561,332

**Applicant(s)**

CHO ET AL.

**Examiner**

SARAH AL HASHIMI

**Art Unit**

2853

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 and 8-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

### DETAILED ACTION

1. Reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

#### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1,2 are rejected under 35 U.S.C. 102(b) as being anticipated by Takahashi (US 6,918,660).

Claim 1:

a) an actuator portion being composed of upper and lower electrodes (fig 12 #24&25), a piezoelectric plate inserted between the upper and lower electrodes(fig 12 #22), a protection layer placed on the upper electrode (fig 12 #23), and a resilient plate disposed beneath the lower electrode (fig 12 #14);

b) an ink passage portion composed of a spacer disposed beneath the resilient plate and forming a side portion of a chamber (fig 12 #13), a channel plate disposed beneath the spacer (fig 12 #12), the channel plate forming an ink passage in one side of the chamber and simultaneously expanding the chamber, and a nozzle plate disposed beneath the channel plate, the nozzle plate forming the lower side of the chamber and having a nozzle communicating with the chamber (fig 12 #11); and

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c) an ink-supplying portion formed by a through-hole reaching the ink passage of the channel plate through the actuator portion and the spacer, wherein the through-hole is through the actuator portion (fig 12 #56a).

Claim 2: a tapered portion is formed at the upper part the nozzle such that the cross section of the chamber varies from the chamber to the starting point of the nozzle (fig 12 #56a has a more narrow cross section towards the tip of the nozzle).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3,8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (US 6,918,660) in view of Yamada (US 2002/0130926).

Takahashi teaches:

Claim 3,8: the ink jet printer head is provided with an ink container above the protection layer (col 1 line 33-35 "a common ink chamber 120 that distributes ink from an ink source (not shown)"), each module being composed of the actuator portion, the ink passage portion and the ink-supplying portion, and wherein ink is supplied to the chamber of each ink jet head module from the ink container through each through-hole and ink passage (col 2 lines 11-18 "an ink ejecting device includes a nozzle from which ink is ejected, an actuator having a pressure

generation portion between its opposed surfaces, a first pressure chamber disposed to face one of the opposed surfaces of the actuator, and a second pressure chamber disposed to face the other surface of the actuator” and col 2 lines 23-26 “The first and second pressure chambers may communicate with each other via a through-hole formed in the actuator and via a second through-hole formed in the actuator and leading to the nozzle”).

Takahashi does not teach but Yamada teaches:

Claim 3,8: a plurality of ink jet head modules are arrayed on a same plane in a matrix fashion (fig 1 #10).

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Takahashi to incorporate the ink jet printer head is provided with an ink container above the protection layer as taught by Yamada in order to create more efficient printing with multiple head modules.

6. Claims 4,6,9,11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (US 6,918,660) in view of Murai (US 2002/0008743).

Takahashi does not teach but Murai teaches:

Claim 4,9: the resilient plate is formed of  $ZrO_2$  (fig 1 #32).

Claim 6,11: the resilient plate is formed of Al.sub.O2.sub.3 (para 66 last line “aluminum oxide film”).

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Takahashi to incorporate the

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resilient plate is formed of  $ZrO_2$  or  $Al_2O_3$  because it is well known in the art to use  $BaTiO_3$  in forming a piezoelectric printhead.

7. Claim 5,10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (US 6,918,660) in view of Nishi (US 2003/0011660).

Takahashi does not teach but Nishi teaches:

Claim 5,10 the resilient plate is formed of  $BaTiO_3$  (para 137 "the ceramic plate can

also be formed using  $BaTiO_3$ ").

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Takahashi to incorporate the resilient plate is formed of  $BaTiO_3$  as taught by Nishi because it is well known in the art to use  $BaTiO_3$  in forming a piezoelectric printhead.

### ***Response to Arguments***

8. Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SARAH AL HASHIMI whose telephone number is (571)272-7159. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 571 272 2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either PAIR or Public PAIR. Status information for unpublished applications is available through PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SA/

/An H. Do/  
Primary Examiner, Art Unit 2853